

Biological Control of Purple Loosestrife

USDA APHIS PPQ CHPST

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Purple Loosestrife Invasion

- ▶ 1800's established in North America
- ▶ From ballast and as medicinal herb
- ▶ Expansion with development, road systems, horticultural use and for bee forage
- ▶ 1996 in all contiguous states (except Florida) and all Canadian provinces.



Efforts to Control

- ▶ Water-level manipulation
- ▶ Herbicides
- ▶ Burning
- ▶ Cutting



Specialist controlling weeds with a backpack sprayer



Volunteer policeman's helmet pull

Search for Natural Enemies

- ▶ Low densities in native range
- ▶ Classical biological control
- ▶ Testing in quarantine



Release Program

- ▶ *Galerucella* -1992
- ▶ *Hylobius transversovittatus* - 1992
- ▶ *Nanophyes marmoratus* - 1995



USDA APHIS PPQ CHPST Beetle Production Efforts

- ▶ Designated Noxious Weed
- ▶ Bozeman, MT, Mission, TX, Niles, MI



Collecting Food



Rearing *Hylobius*

- Semi-artificial Diet (Blossey et al. 2000)



Rearing *Galerucella*



Shipping Beetles 1999-2003

- ▶ Shipped to 27 States
- ▶ Grand Total 1,570,204 *Galerucella*



Special Programs

- ▶ State Partnership Program-Michigan State University
- ▶ Nebraska
- ▶ South Dakota



Documented Success

Windmill Island, Holland, MI



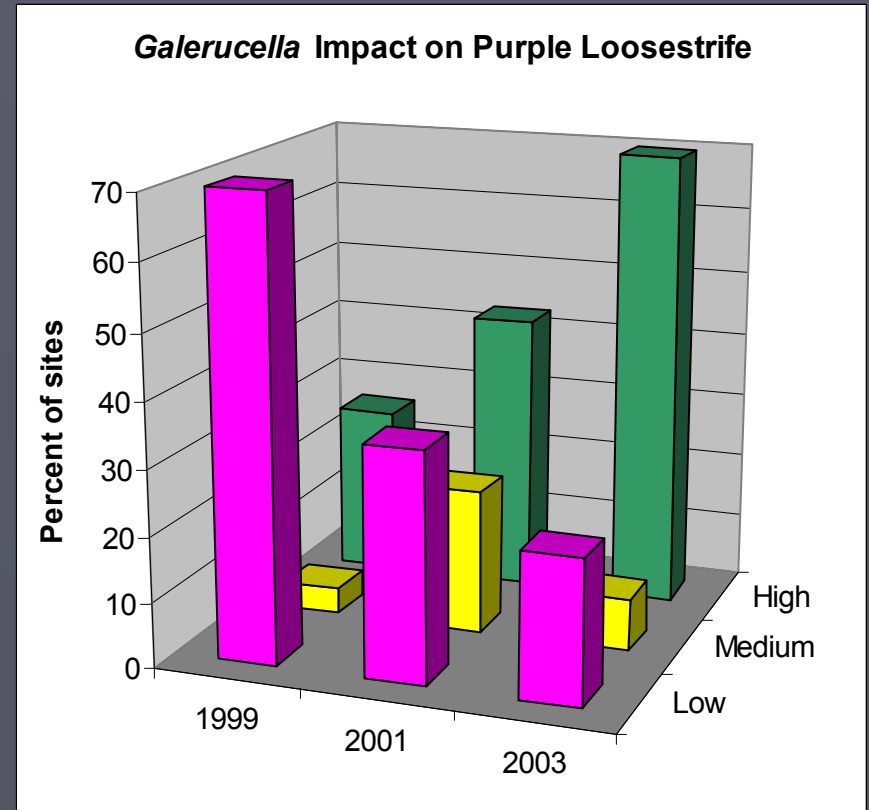
1998



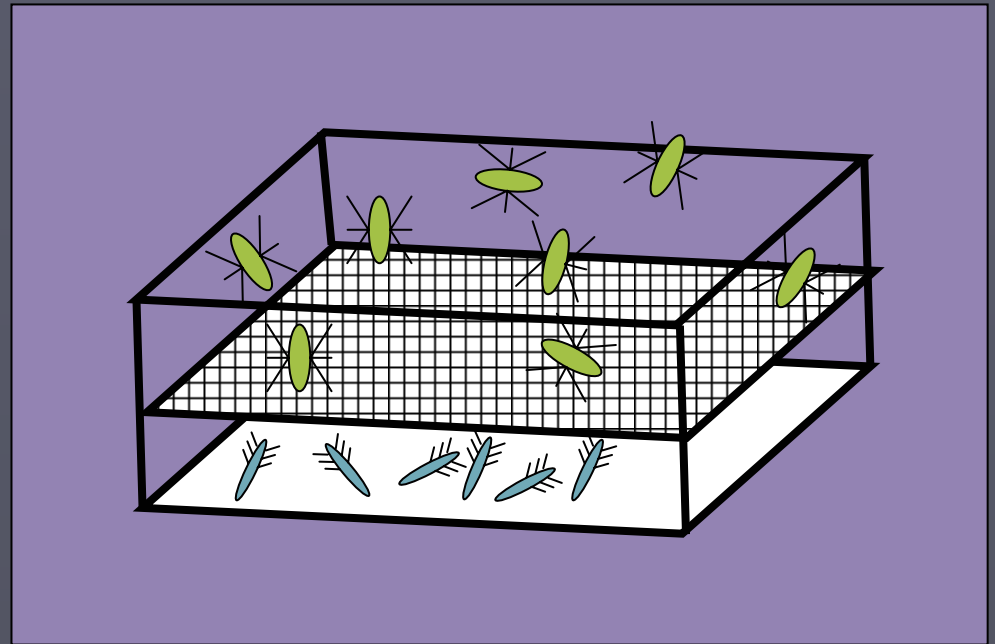
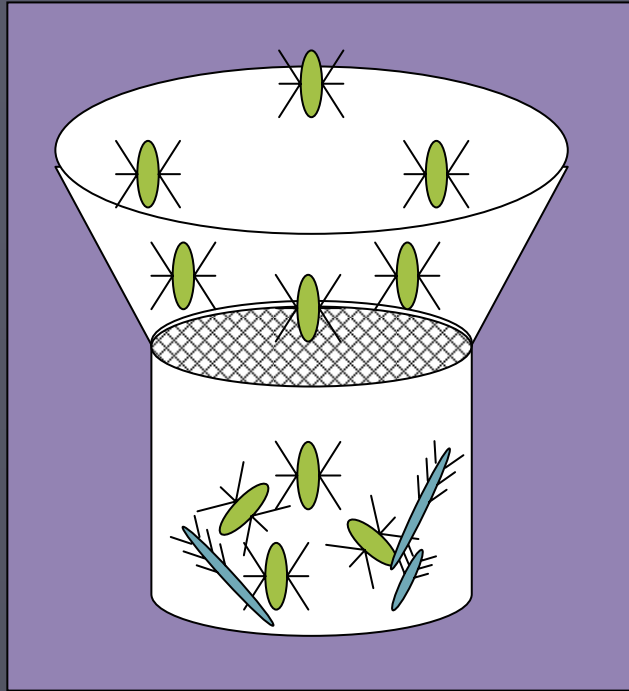
2003

Documented Success (Landis et al. 2003)

- ▶ Beetles established in 100% of the 24 release sites and persisted up to 9 yr.
- ▶ Large populations causing near complete defoliation in 3-5 yr
- ▶ Loosestrife cover reduced up to 74%
- ▶ Native species re-established up to 90%
- ▶ Beetle impacts high in 70% sites in 2003



Redistribution of Beetles



Evaluation of Release

- ▶ Collecting Constant Information
- ▶ Application of Remote Sensing and GIS

